

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A micro-mirror device for an image display apparatus, comprising:

a substrate;

a landing pad provided on the substrate;

a pair of base electrodes provided on opposite sides of the landing pad;

a pair of first posts that protrude from an upper surface of the landing pad, which are isolated from each other by a predetermined interval;

a girder supported by the pair of first posts, which is operative to pivot toward sides of the base electrodes;

a second post protruding from an upper surface of the girder; and

a mirror supported by the second post, which reflects incident light, and receives power via the landing pad,

wherein the mirror is pivoted toward the sides of the landing pad by an electrostatic attraction between the pair of base electrodes and the mirror,

wherein the girder includes:

a support plate for supporting the second post, the support plate having connecting portions which protrude from sides of the support plate in a direction parallel to a lengthwise direction of the pair of base electrodes and are point-symmetrical to each other on the basis of the second post; and

a pair of springs which connect an upper surface of each of the pair of first posts to each of the connecting portions,

wherein the pair of springs are elastically deformed when the mirror is vertically inclined by the electrostatic attraction between the mirror and the base electrodes.

2. (previously presented): The micro-mirror device for an image display apparatus of claim 1, wherein each of the pair of base electrodes has a protruding portion protruding inward to widen an area that faces the girder, and

wherein a longest side of the base electrode is parallel to a side of the mirror.

3. (cancelled)

4. (currently amended): The micro-mirror device for an image display apparatus of claim [[3]] 1, wherein the girder further comprises:

landing tips protruding from opposite sides of the support plate, which contact the landing pad during pivoting.

5. (original): The micro-mirror device for an image display apparatus of claim 1, wherein the pair of first posts have a height that is lower than a height of the second post, so that the mirror does not make an adhesive contact with the pair of base electrodes.

6. (currently amended): ~~[[The]]~~ A micro-mirror device for an image display apparatus of ~~claim 5, comprising:~~

a substrate;

a landing pad provided on the substrate;

a pair of base electrodes provided on opposite sides of the landing pad;

a pair of first posts that protrude from an upper surface of the landing pad, which are isolated from each other by a predetermined interval;

a girder supported by the pair of first posts, which is operative to pivot toward sides of the base electrodes;

a second post protruding from an upper surface of the girder; and

a mirror supported by the second post, which reflects incident light, and receives power via the landing pad,

wherein the mirror is pivoted toward the sides of the landing pad by an electrostatic attraction between the pair of base electrodes and the mirror,

wherein the pair of first posts have a height that is lower than a height of the second post, so that the mirror does not make an adhesive contact with the pair of base electrodes, and

wherein the girder ~~[[comprises:]]~~ includes:

a support plate for supporting the second post, the support plate having connecting portions which protrude from sides of the support plate in a direction parallel to a lengthwise direction of the pair of base electrodes and are point-symmetrical to each other on the basis of the second post; and

a pair of springs which connect an upper surface of each of the pair of first posts to each of the connecting portions,

wherein the pair of springs are elastically deformed in opposite directions when the mirror is vertically inclined by the electrostatic attraction between the mirror and the pair of base electrodes.

7. (original): The micro-mirror device for an image display apparatus of claim 6, wherein the girder further comprises:

landing tips protruding from opposite sides of the support plate, which contact the landing pad during pivoting.

8. (original): The micro-mirror device for an image display apparatus of claim 5, wherein each of the pair of base electrodes has a protruding portion protruding inward to widen an area that faces the girder.

9. (previously presented): The micro-mirror device for an image display apparatus of claim 1, wherein the mirror is pivoted around an axis that is parallel to a lengthwise direction of the pair of base electrodes, the lengthwise direction being parallel to a side of the mirror.

10. (currently amended): ~~[[A]]~~ An image display device, comprising:
a plurality of micro-mirror devices, wherein each of the plurality of micro-mirror devices comprises:
a substrate;
a landing pad provided on the substrate;
a pair of base electrodes provided on opposite sides of the landing pad;
a pair of first posts that protrude from an upper surface of the landing pad, which are isolated from each other by a predetermined interval;
a girder supported by the pair of first posts, which is operative to pivot toward sides of the base electrodes;
a second post protruding from an upper surface of the girder; and
a mirror supported by the second post, which reflects incident light, and receives power via the landing pad,
wherein the mirror is pivoted toward the sides of the landing pad by an electrostatic attraction between the pair of base electrodes and the mirror,

wherein said girder includes a pair of spring members, and said mirror has an axis of rotation which is perpendicular to a lengthwise direction of said pair of spring members, wherein the pair of spring members respectively connect the girder to the pair of first posts.

11. (original): The image display device of claim 10, wherein the plurality of micro-mirror devices are arrayed to form a two-dimensional structure.

12. (original): The image display device of claim 10, wherein an area ratio of each of the plurality of micro-mirror devices is controlled by the electrostatic attraction between the pair of base electrodes and the mirror.

13. (currently amended): A method of reflecting light using a micro-mirror device in an image display apparatus, comprising:

supplying a driving voltage to at least one of a pair of base electrodes of the micro-mirror device, the base electrodes having a landing pad disposed therebetween;

creating an electrostatic attraction between the at least one of the pair of the base electrodes and a mirror, wherein the mirror is pivotally supported by a pair of spring members so as to be pivoted around an axis formed in a lengthwise direction of the pair of base electrodes such that one of the spring members is forced in a direction opposite a direction of the other of the spring members when the mirror is pivoted, the spring members being connected to a support plate; and

altering the driving voltage which is supplied to the at least one of the pair of base electrodes so that a reflection angle of light incident upon the mirror is controlled and so that landing tips, which protrude from the support plate, contact the landing pad when the mirror is pivoted.

14. (previously presented): The micro-mirror device for an image display apparatus of claim 1, wherein the pair of base electrodes oppose each other in a non-diagonal manner with respect to the mirror.

15. (previously presented): The image display device of claim 10, wherein the pair of base electrodes oppose each other in a non-diagonal manner with respect to the mirror.

16. (currently amended): ~~[[The]]~~ A micro-mirror device for an image display apparatus ~~of claim 1, comprising:~~

a substrate;

a landing pad provided on the substrate;

a pair of base electrodes provided on opposite sides of the landing pad;

a pair of first posts that protrude from an upper surface of the landing pad, which are isolated from each other by a predetermined interval;

a girder supported by the pair of first posts, which is operative to pivot toward sides of the base electrodes;

a second post protruding from an upper surface of the girder; and
a mirror supported by the second post, which reflects incident light, and receives power
via the landing pad,

wherein the mirror is pivoted toward the sides of the landing pad by an electrostatic
attraction between the pair of base electrodes and the mirror,

wherein said girder includes a pair of spring members, each spring member respectively having an end in connection with one of said first posts, and wherein said spring members are disposed so that one of said spring members is forced in a direction opposite a direction of the other of said spring members when said mirror is pivoted, and

wherein the girder includes landing tips which protrude from sides of the girder and contact the landing pad when the mirror is pivoted.

17. (currently amended): ~~[[The]]~~ A micro-mirror device for an image display apparatus ~~of claim 1, comprising:~~

a substrate;
a landing pad provided on the substrate;
a pair of base electrodes provided on opposite sides of the landing pad;
a pair of first posts that protrude from an upper surface of the landing pad, which are
isolated from each other by a predetermined interval;
a girder supported by the pair of first posts, which is operative to pivot toward sides of
the base electrodes;

a second post protruding from an upper surface of the girder; and
a mirror supported by the second post, which reflects incident light, and receives power
via the landing pad,

wherein the mirror is pivoted toward the sides of the landing pad by an electrostatic
attraction between the pair of base electrodes and the mirror,

wherein said girder includes a pair of spring members, and said mirror has an axis of rotation which is perpendicular to a lengthwise direction of said pair of spring members, wherein the pair of spring members respectively connect the girder to the pair of first posts.

18. (currently amended): ~~[[The]]~~ An image display device of claim 10, comprising:
a plurality of micro-mirror devices, wherein each of the plurality of micro-mirror devices
comprises:

a substrate;
a landing pad provided on the substrate;
a pair of base electrodes provided on opposite sides of the landing pad;
a pair of first posts that protrude from an upper surface of the landing pad, which are
isolated from each other by a predetermined interval;
a girder supported by the pair of first posts, which is operative to pivot toward sides of
the base electrodes;
a second post protruding from an upper surface of the girder; and

a mirror supported by the second post, which reflects incident light, and receives power via the landing pad,

wherein the mirror is pivoted toward the sides of the landing pad by an electrostatic attraction between the pair of base electrodes and the mirror,

wherein said girder includes a pair of spring members, each spring member respectively having an end in connection with one of said first posts, and wherein said spring members are disposed so that one of said spring members is forced in a direction opposite a direction of the other of said spring members when said mirror is pivoted, and

wherein the girder includes landing tips which protrude from sides of the girder and contact the landing pad when the mirror is pivoted.

19-20. (cancelled)